Neighbourhood Renewal and Health: Evidence From a Local Case Study

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Abstract

This article presents findings from a before-and-after study of the effects of neighbourhood renewal on residents' health. Survey data were analysed using multivariate logistic regression. Before the renewal programme, damp and draughts had significant independent effects on respiratory health problems. Draughts and perceived community safety were associated with mental health problems. Children's mental health was associated with parental mental health.

Following the renewal work, improvements occurred in both adults' and children's mental health, and smoking declined sharply. Respiratory health did not improve and there was no change in use of health services. Neighbourhood renewal in deprived areas can have an important role in improving community health.

Keywords: Housing; Renewal; Mental health; Respiratory health

Introduction

By the end of the 1960s, it was widely considered that the most unhealthy housing in Britain had been removed from the housing stock (Byrne et al., 1986; Conway,1995). For much of the 1970s and 1980s the link between housing and health was not a policy issue. However, despite general improvements in certain indicators of physical housing conditions, evidence that this link was not broken accumulated following publication of the Black Report, which put housing back on the public health agenda (Townsend and Davidson, 1982). Where this evidence has influenced housing policy and practice the response has been more selective than the 'clean sweep' slum clearance of the past. The Chartered Institute of Housing, for example, advocates a number of specific measures targeted on suspected health damaging defects such as lack of insulation and poor security (Chartered Institute of Housing, 1998).

There is now a substantial body of evidence pointing to a link between poor quality housing conditions and health problems (Acheson, 1998; Ineichen, 1993; Marsh et al., 1999). This evidence largely comes from cross sectional surveys using self-reported measures of health status and housing conditions and consists of statistical associations between various housing variables and both mental and physical health problems. Self-reporting has been found to be reliable, although careful attention needs to be given to questionnaire design (Hopton and Hunt, 1996; Jenkinson, 1994). Physical health problems found to be associated with poor housing are mainly infections, respiratory diseases and chronic illness. Housing-related mental health problems include depression and anxiety, symptoms of which can be grouped together under the generic term 'psychological distress' (Halpern, 1995). Both physical health problems and psychological distress have been found to be related to overcrowding,

damp, mould, indoor pollutants, infestations, cold and homelessness. Mental health problems have in addition been linked with living in unpopular housing areas and high rise flats (Halpern, 1995; Hopton and Hunt, 1996).

Establishing that poor housing conditions are a cause of ill-health rather than simply *associated* with ill-health is difficult because of the confounding effects of other variables such as household type, age, income and smoking. This issue can be tackled using appropriate designs and statistical techniques, and preferably longitudinal data so that changes in housing conditions can be linked to the health status of the same individuals over time. In one of the few longitudinal studies so far undertaken, Marsh et al. (1999) investigated the effects of housing deprivation on health. They created a housing deprivation index that drew on a range of housing variables from the UK National Child Development Study, including physical characteristics, location, satisfaction, past homelessness and independent assessments of housing difficulties. Housing deprivation substantially increased the likelihood of disability and severe ill-health across the life-course of individuals sampled in the study. The strongest effects arose from multiple housing deprivation, equivalent to the influence of smoking and greater than excessive alcohol consumption in terms of effects on health status.

Although this evidence strongly suggests that improving housing conditions should achieve a health gain for local residents, there are still few studies that have sought to measure health gain arising from housing renewal. In particular, relatively little is known about the scale or type of changes in health status that can result from physical improvements, or whether savings in expenditure on health care follow. This article

seeks to add further evidence about these issues at a time when urban regeneration in the UK is high up the political agenda (Department of the Environment, Transport and the Regions, 2000).

Aims and Methods

The article reports on survey research undertaken in a Neighbourhood Renewal Area (NRA) in the west end of Newcastle Upon Tyne in Northern England. In 1992, the Scotswood NRA comprised 791 dwellings, mainly privately owned pre-1919 terraced housing but with some inter-war council housing and 1960s low rise flats. The NRA was declared under the provisions of the 1989 Local Government and Housing Act, which allowed for the comprehensive renewal of areas with high levels of both substandard housing and deprivation. This part of Scotswood had been showing signs of decline for a number of years and in the late 1980s rapid physical deterioration set in, together with rising crime. In 1993, over 80 per cent of households in the area were in receipt of means-tested state benefits (Newcastle City Council, 1993). A physical survey of the neighbourhood undertaken by the local council classified 44 per cent of the housing stock as unfit for human habitation and 96 per cent as meeting the criteria for eligibility to a discretionary renovation grant.

The Housing Department commissioned a household survey of the area to provide data about residents' circumstances and preferences. Two of the authors, at the time Head of Research with Newcastle City Council and Director of Public Health in the District Health Authority, recognised an opportunity to investigate whether the area's housing problems were associated with ill-health in this community, and whether housing improvements could improve the health status of residents. A structured

interview schedule was used, based on the questionnaire developed by Byrne et al. (1986) for their study of the relationship between housing conditions and the health of council tenants in Gateshead in the North East of England. Respondents were asked questions about symptomatic health regarding respiratory function, mobility and depression which came from previously validated questionnaire items (Byrne et al., 1986, pp. 51–52, 67). There was a particular focus on conditions known to be associated with poor housing, especially respiratory disease and depressive illnesses.

Questions about housing problems included ability to keep warm in winter, presence and severity of damp and draughts, a checklist of various housing defects and whether there were problems with vermin. Questions about the neighbourhood included an overall assessment of how nice the area was as a place to live, a checklist of dislikes about the area, and questions about security and safety. General health status was assessed by asking respondents to classify their own health and that of every other family member in the household over the past year as good, fairly good or not good. An acute respiratory health problem was identified if one or more of the following were reported during the past two weeks: cold or flu, tonsillitis, sore throat, cough or catarrh. A chronic respiratory health problem was identified if one or more of the following were reported: tuberculosis, bronchitis, asthma, frequent chesty coughs, or wheezy or whistling chest. For adults, psychological distress was identified if one or more of the following were reported: being unable to concentrate, sleeping badly, depression or weeping so cannot face work or mix with others, feeling hopeless and overwhelmed, losing appetite, and feeling it is too much effort to do anything. Adult respondents were also asked if they had trouble with their nerves. For children, psychological distress was identified if one or more of the following were reported:

bed wetting, being upset or constantly weeping so that the child cannot face school or mix with others, being unable to concentrate, and loss of appetite.

In addition to these health status measures, respondents were asked about the use of health services by themselves and family members. There are four indicators: a visit to or from a doctor during the past 2 weeks (apart from hospital); hospital attendance as an outpatient during the last 3 months (other than straightforward pre- or post-natal visits); admission to hospital as an in-patient overnight or longer in the past year (apart from childbirth); and receiving prescribed medication for more than a month during the past year. Finally, questions were asked about exercise and smoking. The respondent answered for themselves and for each family member whether he/she took 'enough exercise to stay basically healthy', whether he/she smoked and, if so, how frequently and how much.

The first survey took place during the summer of 1992. A team of trained interviewers from the local authority's Research Section attempted to contact residents at every address in the area, moving on to the address next door if there was no response after three attempts. Interviewers were instructed to obtain an interview with the person mainly responsible for the household, with this person also asked about the health of other adults and children (aged less than 16) living at the address. Whilst interviewing one respondent per household is a possible source of bias, in general respondents had no difficulty answering questions about other family members. In those few cases where this was difficult, 'don't know' responses were recorded and coded as missing cases. A total of 415 interviews were completed in the first phase, representing a 70 per cent response rate from occupied dwellings. Data for 749 adults aged 16 or older and 249 children were obtained.

The follow-up survey, carried out after the renewal work had been completed, was undertaken in June 1997. Some housing had been demolished since 1992 and interviews were completed with 230 household respondents, a 62 per cent response rate from occupied dwellings. Data were collected for 394 adults and 131 children. There were 98 households for which interviews were also obtained in 1992, and this enabled analysis of a longitudinal sample of 209 people about whom data were collected in both 1992 and 1997.

Analysis proceeded by first considering changes variable by variable between 1992 and 1997. This was carried out separately for the cross sectional samples and the longitudinal sample, and for children and adults, and significance was tested using chi-square for the cross-sectional data and McNemar's test for the longitudinal data. The demographic, economic, housing and neighbourhood variables were explored in bivariate analyses with the health outcome variables. Multivariate analysis was then undertaken, using logistic regression because the variables are discontinuous and often dichotomous. The following outcome variables were selected for analysis from the 1992 cross-sectional sample: acute respiratory index (one or more problems), chronic respiratory index (one or more problems), psychological distress index (one or more problems), GP visit(s), out-patient visit(s) and inpatients stay(s). Various combinations of independent variables—demographic, economic, housing and neighbourhood—were tested to find the combination, or sometimes single variable, which best predicted the outcome variable. This work was informed by the bivariate analyses and a review of the literature. Interactions and collinearity were also considered, although no significant interactions were found and the inclusion of interactions did not improve any of the models.

Changes to the area

The housing renewal programme cost £5.5 million and included environmental improvements, external fabric repairs, refurbishment and some demolition of void dwellings, renovation grants for individual dwellings and security and road safety improvements. During the 5 years between the start and completion of the programme, residents moved in and out of the area and the total population declined, but the demographic and socioeconomic composition of the area changed very little (see Table 1). Respondents in 1997 had lived in the area for longer and there was a shift in housing tenure from private renting to social renting, as would be expected in a renewal area. Also not surprising is that the longitudinal sample has an older age structure in 1997. The proportion of households receiving means tested housing or council tax benefit declined for the cross-sectional samples, but this was not significant. This proportion also declined among the longitudinal sample and was significant at the 0.05 level, as was an increase in households with no wage earner. These changes are likely to reflect the effect on benefit entitlement of children leaving home and retirements from the workforce. Respondents were predominantly white: 96.4 percent in 1992 and 97.4 per cent in 1997.

Table 2 compares respondents' perceptions of the area and their reports of housing defects before and after the renewal programme. Despite the area's problems, at the start of the programme a high proportion of respondents were happy with their actual home. But views about the general neighbourhood were on the whole very negative. These improved significantly following completion of the renewal work and, although

more respondents thought the neighbourhood had a poor community spirit in 1997 compared with 1992, they were much more likely to feel safe in 1997. The crime reduction and community safety measures appear to have had a positive effect on both perceptions of safety and actual burglaries of homes.

Turning to housing defects, the proportion of damp dwellings in the cross-sectional samples fell from just under one in three in 1992 to just under one in eight in 1997. Both 'serious damp' and damp which the respondent felt 'affects the health of a person in the household' halved in prevalence. Draughts were a much more common problem than damp, however, and this was one of the most notable findings from the survey. Previous studies have neglected this problem and focused on damp because of its link with mould growth and associated respiratory conditions. In the cross sectional samples, the proportion of draughty dwellings fell from 50 per cent in 1992 to 30 per cent in 1997. Similar improvements are evident for the longitudinal sample. There was, though, little change in the proportion of respondents who reported that they and their family were not always able to keep warm last winter. This problem was partly income-related with households receiving housing or council tax benefit more likely to report difficulty keeping warm: in 1992, 23.6 per cent of benefit-dependent households had difficulty keeping warm com pared with 14.8 per cent of non benefit dependent households; the former fell slightly to 19.2 per cent by 1997, while the latter remained the same.

Health Problems

Table 3 shows how self-reported health status changed between 1992 and 1997. For the cross-sectional samples there was no significant change in adults' general health

status between 1992 and 1997, but the general health status of the longitudinal sample worsened. While the health of 5 per cent of the longitudinal sample improved, 18 per cent deteriorated. An important cause appears to be a significant increase in chronic respiratory conditions. When age was controlled for, this increase was confined to the age group that was 50 years plus in 1992, suggesting that this worsening health may be age-related.

The prevalence of psychological distress showed a significant decline between 1992 and 1997: there was a fall of 10 per cent in adults with one or more mental health problems and, among the longitudinal sample, a fall of almost a half in adults having trouble with nerves.

Overall, there was no significant change in the use of health services. Among the longitudinal sample the proportion of respondents receiving prescribed medication for a month or more increased significantly. This seems likely to be associated with worse general health status and, in particular, greater prevalence of symptoms of chronic respiratory illness among this sample.

The most striking decline reported in Table 3 is in the prevalence of smoking. Smokers also smoked fewer cigarettes: those smoking 10 or more cigarettes a day fell 10 per cent to 80 per cent.

Patterns of change in children's health were similar to adults, although the general health status of children was substantially better in 1997 than in 1992 (the improvement is not statistically significant at the 5 per cent among the longitudinal sample). There was no significant change in children's respiratory health but there

was a very marked decline in the prevalence of psychological distress: from 23 per cent to 9 per cent among the cross-sectional samples and from 21 per cent to 2 per cent among the longitudinal sample. GP visits fell from 16 per cent to zero among the longitudinal sample, but there was no significant change in GP visits for the cross-sectional samples.

Relationships between Variables

Multivariate analysis was carried out to find the best fitting model for predicting the acute respiratory index among adults in the 1992 sample. The explanatory variables considered for inclusion in the model were age, sex, household type, overcrowding, employment status, receipt of housing or council tax benefit, un/waged household, car ownership, housing tenure, dwelling type, smoking, damp, keeping warm and draughts. Interactions were also considered. The best model included only one of the variables—damp, dichotomized into serious damp or minor/no damp. An adult living in a dwelling with serious damp was significantly more likely to have one or more acute respiratory health problems than an adult living in a dwelling with minor or no damp. The odds ratio is 2.40 (95 per cent confidence interval 1.34–4.39). However, adults with a reported acute respiratory health problem were no more likely to use health services than other adults. In terms of change between 1992 and 1997, as already noted the prevalence of one or more of these problems did not alter significantly, but by 1997 there was no significant relationship between damp and adult acute respiratory symptoms among the cross-sectional sample.

Table 4 shows the best fitting model for the chronic respiratory index following consideration of the same variables as for the acute index. This model also includes

serious damp but three other dichotomised variables are also significant: smoking (smoker or ex-smoker/never smoked), age group (16–49/50 plus) and un/waged household (no wage earner(s) in household/wage earner(s) in household). After controlling for these non-housing variables, serious damp increases the odds of one or more chronic respiratory health problems by 2.1 (1.26–3.5). Adults with chronic respiratory health problems were significantly more likely than other adults to have seen a GP in the past 2 weeks (28 per cent compared with 16 per cent). They were also significantly more likely to have visited hospital as an outpatient in the past 3 months (19 per cent compared with 13 per cent), to have been a hospital in-patient in the last year (14 per cent compared with 8 per cent), and to be on prescribed medication for more than a month (59 per cent compared with 26 per cent). As with acute symptoms, damp was not significant in 1997.

Table 5 shows the best fitting model for predicting reported psychological distress among adults. The variables considered were age, sex, household type, overcrowding, employment status, receipt of housing or council tax benefit, un/waged household, car ownership, housing tenure, dwelling type, happiness with home, damp, keeping warm, draughts, vermin, various housing defects, acute respiratory condition, chronic condition, long-standing illness or disability, perception of the area as a nice place to live, dislikes about the area, safety of the area and burglary in the past year. This best model includes four of these variables, including two associated with the renewal programme: serious draughts and area safety. The other two variables were chronic respiratory condition and age, both of which have been linked in the literature with psychological distress (Arling, 1987; Fitzpatrick et al., 1984). The cases are restricted to respondents rather than all adults because one of the variables, safety of the area,

was not collected for adults other than the respondent. Controlling for the effects of chronic respiratory ill-health, age 50 or older and serious draughts, a respondent who perceives the area to be unsafe is significantly more likely to report one or more mental health problems than a respondent who perceives the area as safe. The odds ratio is 2.35 (1.41–3.92). After controlling for the other three variables, an adult living in a dwelling with serious draughts is significantly more likely than an adult living in a dwelling with no or minor draughts to report mental health problems, with an odds ratio of 2.28 (1.41–3.69).

Adults with mental health problems are significantly more likely than other adults, at the 5 per cent level, to have seen a GP in the past 2 weeks (27 per cent compared with 17 per cent), to have been a hospital inpatient in the last year (16 per cent compared with 7 per cent) or to be on prescribed medication for more than a month (48 per cent compared with 27 per cent). Adults with mental health problems are also more likely than other adults to smoke (81.9 per cent compared with 71.5 per cent).

Among children, the best fitting model for the acute respiratory index also included only one variable–serious damp (chi-square 5.29, significant at $p<0.05$). Living in a dwelling with serious damp increases the odds of one or more acute respiratory problems by 2.7 (1.20–6.01) compared with a dwelling with no or minor damp. Unlike adults, children reported as having an acute respiratory health problem were more likely than other children to have seen a GP in the past two weeks: 30.8 per cent compared with 10.4 per cent.

The best fitting model for the chronic respiratory index for children included two variables–damp and un/waged household (chi-square 15.00, significant at $p<0.00$).

Among other variables tested was adult smoking in the household, but this was not significant. Controlling for whether the child lives in an unwaged household, damp significantly increases the likelihood of reporting one or more chronic respiratory health problems. The odds ratio is 3.50 (95 per cent confidence interval 1.69–7.18). Although the inclusion of the unwaged household variable improved the model, the p value was just above the 5 per cent level at 0.051, with an odds ratio of 1.8 (1.0–3.2).

Among children with a chronic respiratory health problem, 18.7 per cent had seen a GP in the last 2 weeks, compared with 11.4 per cent without a problem, but this difference was not significant at the 5 per cent level. As with adults, in 1997 serious damp lost its significance in predicting both acute and chronic respiratory health problems. Because the vast majority of children in the longitudinal sample lived in dwellings that were not seriously damp in 1992 or 1997 it is impossible to analyse longitudinal change.

The best fitting model for predicting reported psychological distress among children included three variables. The presence of a chronic respiratory health problem, living in an unwaged household and a parent with a mental health problem all significantly increased the likelihood of a child having one or more mental health problems (chi-square 25.05, significant at <0.001). Thus, no housing variables were directly relevant, although damp is implicated in poor child respiratory health, and area safety and serious draughts in poor adult mental health, so these may have an indirect effect on children's mental health. Poor child mental health was not associated with higher use of health services.

Discussion

The improvements in adult mental health that occurred after completion of the renewal programme appear to be linked to a more widespread perception of the area as safe and the progress made with tackling very draughty housing. Children's mental health also improved but it was not possible to identify a direct link with housing or neighbourhood factors. The reduction of damp housing to a very low level in 1997 appears to have broken its association at a statistical level with respiratory health problems. However, in the absence of data from a comparison neighbourhood that did not undergo renewal it is possible that factors other than the renewal programme contributed to these changes. This cannot be ruled out with certainty but seems unlikely. The demographic and socioeconomic composition of the area did not change significantly over the 5 years, and analyses of both the cross-sectional data and the longitudinal cohort point consistently to renewal-related health gains after controlling for other variables.

The identification of serious draughts as a potential risk to mental health is a novel finding, previous research having identified housing dampness as associated with mental ill health, which was not found to be the case in this study (Hopton and Hunt, 1996). A mental health gain also appears to have resulted from the significant proportion of residents whose original perception of the area as unsafe changed to safe after the renewal work. However, safety continued to show a significant relationship with mental health in 1997 and over 40 per cent of respondents still regarded the area to be unsafe. Given this, the impact of the renewal programme on safety should perhaps be viewed as a qualified success, although mental health can be expected to influence perceptions and experiences of the environment, as well as vice

versa, and this is likely to explain at least some of the relationship that persisted in 1997 (Birtchnell et al., 1988; Halpern, 1995).

The substantial decline in smoking that was found to occur in both the cross-sectional and longitudinal samples may have been linked to improved mental well-being following the renewal programme. The decline is particularly striking because the national proportion of adults who smoke did not change between 1992/3 and 1996/7 (Office for National Statistics, 1999). It is known that the uptake of smoking increases with level of deprivation and it has been suggested that smoking is a type of self-medication to manage stress and help cope with strains resulting from material deprivation (Graham, 1987). Another view is that the major issue is nicotine dependence which makes it difficult to give up smoking, although this argument also recognises that stress is likely to make it more difficult to give up (Jarvis and Wardle, 1999). Either could explain the decline in smoking found in this study. Smoking was significantly associated with the existence of one or more mental health problems and the receipt of housing or council tax benefit. In the 1992 cross-sectional sample, the best fitting logistic regression model for smoking only included these two variables (chi-square 22.51, significant at $p<0.00$). The decline in the prevalence of mental health problems between 1992 and 1997 may therefore partly explain the decline in smoking, but there were no significant relationships between smoking and any of the housing or neighbourhood variables used in the study. Either the study did not capture those aspects of neighbourhood-related stress that contribute to smoking or there were other factors, unrelated to neighbourhood renewal, that were not measured but which contributed to an improvement in mental health or a decline in smoking. The sample may also be too small to detect a relationship between housing renewal, improved

mental health and a decline in smoking. The decline, however, is sufficiently striking to merit further research into the role of housing and neighbourhood problems in smoking behaviour.

The decline in mental health problems among children occurs among both the cross-sectional and longitudinal samples. If the decline only occurred among the longitudinal sample it is possible that it was due to the children growing older. This seems unlikely given that the cross-sectional samples compare the same age group of under 16 year olds. However, none of the housing or neighbourhood variables had a significant relationship with children's mental health in 1992, so the renewal programme may not have had a direct impact on their mental health problems. Given the association between parental and child mental health, the renewal programme may have had an indirect effect on children's mental health via the better mental health of their parents, possibly through improved family relationships. As with smoking, this discussion is speculative given the limitations of the data, but these findings point to possible areas for further research about the impact of neighbourhood renewal on both smoking behaviour and parent–children relationships.

Conclusion

The environmental and security improvements funded by the renewal programme were successful in improving many residents' perceptions of the area and their feelings of safety. Together with the reduction in serious draughts, these interventions were found to be associated with an improvement in community mental health. The number of seriously damp or draughty houses fell sharply and by 1997 was sufficiently small for there to be no statistically significant relationship with

respiratory or mental health problems. However, the community's respiratory health did not improve between 1992 and 1997, probably due to factors unrelated to the programme. Although there were insufficient damp and draughty houses in 1997 to allow appropriate analysis, it is possible that removal of damp and draughts for many residents helped to prevent further deterioration in respiratory health rather than improve it. There is some evidence for this kind of effect from Hopton and Hunt's (1996) longitudinal study of the effects of heating improvements. If this was the case, the renewal programme may have had some effect in preventing an increase in health care utilisation.

Smith et al. (1994) conclude from a New Zealand study that lack of social support outweighs housing related stressors in predicting psychological distress, although their study was concerned with people with serious mental illness rather than community health. The present study did not measure social support directly, but no significant differences in mental health by household type or marital status were found, and these would be expected if social support was significant. Also, given the overall similarity of the local population in 1997 compared with 1992, it seems unlikely that any significant change in levels of social support would have occurred that was unrelated to the renewal work. Both the longitudinal and cross-sectional evidence point to the physical improvements in the area having independent beneficial effects on mental health. However, it is possible that part of the effect of physical improvements was to improve social support at some level, given existing evidence that housing estate improvements can lead to more sociable and civil neighbourhoods (Hoggett, 1999).

There is little evidence of the renewal programme's impact on health leading to a lower utilisation of health services. Indeed, the proportion of residents on prescribed medication increased in the longitudinal sample. Any health gain may have been overshadowed by the continuing effects of long-standing poverty and ageing, and it is possible that without the renewal work levels of ill-health may have been worse still in 1997. There is little doubt that the renewal programme improved the quality of life for residents in the area, reflected in better mental health and achieved at an average cost of just under £8000 per dwelling. Given that many people with mental health problems do not seek medical help, it is perhaps not surprising that the lower level of psychological distress was not reflected in a significant decline in the utilisation of general health services (White et al., 1997). The decline in smoking is an intriguing finding and, whilst it was not possible to link this to any particular features of the renewal programme, it is quite possible that part of the explanation is the general improvement of conditions in the area. When added to the apparent positive effects on children's health of improved parental mental health, this points to a possible financial health gain in the longer term.

The area's remaining problems in 1997 should not be under-estimated. It is possible that a 'clean sweep' redevelopment might have achieved a better health outcome than improving the existing housing stock. The evidence for this is not strong and, indeed, some studies suggest that demolition and rehousing may adversely affect residents' health (Halpern, 1992; Hopton and Hunt, 1996). There was a high level of satisfaction with the individual dwellings prior to the renewal programme, and residents' concerns were much more to do with conditions in the neighbourhood. The neighbourhood was a very stressful area in which to live, and parents' distress may transmit in many cases

to children and-via smoking-put their physical health at risk in the longer term. The renewal programme made a contribution to reducing the stress of living in this area, but by no means removed it. In fact, in 2000 the continuing problems of the wider area led Newcastle City Council to propose large-scale demolition that would include this neighbourhood as part of an ambitious redevelopment strategy. The proposal was extremely unpopular with local residents and the ensuing protests led to a substantial reduction in demolitions and a right for residents to stay put (Housing Today, 2000).

Mental health problems are known to have a high prevalence in deprived areas, and factors such as community safety and the stress involved in coping with poor housing conditions have been linked to these problems (Hoggett et al., 1999). There are therefore good prospects for local interventions to have an effect. This study has shown the importance of tackling area safety and very draughty housing in this particular neighbourhood. The cross-sectional analysis of the 1992 data pointed to these issues, and the longitudinal analysis confirmed the reasonable efficacy of measures implemented to tackle them. The study also adds evidence to the argument that, as well as associations between specific features of housing and related health problems, there is an association between residents' perceptions and experiences of their local environment and their health status (Sooman and MacIntyre, 1995).

The recent Social Exclusion Unit report on a national strategy for neighbourhood renewal makes only passing references to the role of neighbourhood renewal in improving health (Social Exclusion Unit, 2000). Instead, the strategy concentrates on helping people into employment, on self-help and on improving local services. These are all important aims, but ones that could be undermined if tackling local causes of

poor health, and poor mental health in particular, is not included as a priority, and indeed a prerequisite, for community regeneration. Housing and environmental improvements that are informed by residents' perceptions and views, and target health risks, have a role to play.

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Table 1

Demographic, Housing and Economic Features of the Samples[a]

	Cross Sectional Samples		Longitudinal Sample	
	1992 % (no.)	1997 % (no.)	1992 % (no.)	1997 % (no.)
Age of household members				
0-15	24.8 (249)	25.0 (131)	20.6 (43)	10.1 (21)
16-64	62.2 (621)	61.0 (320)	67.5 (141)	70.7 (147)
65+	12.8 (128)	14.0 (74)	12.0 (25)	19.3 (40)
Sex of respondents				
Male	41.7 (173)	40.4 (93)	31.9 (29)	34.1 (31)
Female	58.3 (242)	59.6 (137)	68.1 (62)	65.9 (60)
Sex of total cases				
Male	48.4 (483)	45.7 (240)	45.0 (94)	45.7 (95)
Female	51.6 (514)	54.3 (285)	55.0 (115)	54.3 (113)
Household type				
Adult(s) plus children	35.0 (145)	34.1 (78)	36.1 (35)	30.5 (30)
Non-pensioner adult(s) only	39.1 (162)	39.0 (90)	35.1 (34)	34.7 (34)
1+ pensioner household	26.0 (108)	26.9 (62)	28.9 (28)	34.7 (34)
Length of residence at this address				
Less than 1 year	24.6 (102)	13.2 (30)	9.2 (9)	
1-4 years	23.4 (97)	18.4 (42)	17.3 (17)	
5 years or more	52.0 (216)	68.4 (157)	73.5 (72)	100.0 (98)
Housing tenure				
Owner occupier	39.1 (162)	39.3 (90)	56.1 (55)	57.1 (56)
Social housing tenant	26.7 (111)	33.3 (77)	29.6 (29)	29.6 (29)
Private renting	34.2 (142)	27.4 (63)	14.3 (14)	13.3 (13)
Income				
Housing or council tax benefit	55.9 (232)	47.2 (109)	41.8 (41)	37.5 (36)
Household with no wage earner	61.7 (256)	61.5 (141)	41.8 (41)	54.1 (53)

[a] In the longitudinal sample, a small number of respondents in 1997 were not the same respondents as interviewed in 1992, but all individuals for whom data were gathered in 1992 are included in 1997 in this and subsequent tables. New (post-1992) household members are excluded. Household and housing data are from the respondent (one per household) in all samples. Among the longitudinal sample, children in 1992 are compared with the same people in 1997, although a proportion of these were then older than 15. Children who were not present in the household in 1992 are excluded from the longitudinal analysis. All cases in the cross-sectional samples are children aged less than 16.

Table 2

Housing and Neighbourhood Problems[a]

	Cross Sectional samples		Longitudinal sample	
	1992 *n* = 415 % (no.)	1997 *n* = 230 % (no.)	1992 *n* = 98 % (no.)	1997 *n* = 98 % (no.)
Happy with present home	77.3 (321)	85.7 (197)[b]	85.7 (84)	84.7 (83)
View of the area as a place to live:				
Very/quite nice	45.0 (187)	70.0 (161)[c]	49.0 (48)	61.9 (61)d
Not very nice/terrible	55.0 (128)	30.0 (69)	51.0 (50)	38.1 (37)
Dislikes about the area				
Poor community spirit	25.8 (107)	32.0 (74)[d]	22.4 (22)	32.6 (31)
Feel unsafe walking at night	57.1 (237)	50.5 (116)[d]	59.4 (58)	52.1 (50)
Derelict and rundown housing	87.5 (363)	74.7 (172)[c]	93.9 (92)	79.2 (76)[b]
Poor street lighting	25.5 (106)	8.3 (19)[c]	24.5 (24)	15.1 (14)
Pavements needing repair	54.2 (225)	41.6 (96)[c]	52.0 (51)	47.4 (45)
Potholes in roads	49.4 (205)	30.0 (69)[c]	45.9 (45)	30.1 (28)[d]
Noisy and dangerous traffic	49.4 (205)	41.5 (95)[d]	50.0 (49)	43.2 (41)
More than 12 dislikes identified	46.3 (192)	34.7 (80)[b]	48.0 (47)	45.9 (45)
Safety of the area				
Very/quite safe	20.5 (85)	59.3 (136)[d]	25.5 (24)	50.5 (49)[c]
Not very safe/quite dangerous	79.5 (330)	40.7 (94)	74.5 (70)	49.5 (48)
Suffered burglary in last year	34.9 (145)	16.1 (37)[d]	25.5 (25)	15.3 (15)
Unable to keep warm last winter	19.7 (79)	16.4 (35)	15.4 (14)	14.3 (13)
Dwelling has				
Serious damp	11.6 (48)	6.0 (14)[d]	4.2 (4)	5.1 (5)
Minor damp	17.7 (73)	6.9 (16)	19.8 (18)	9.2 (9)
No damp	70.7 (293)	87.1 (200)	76.0 (70)	85.7 (84)
Damp that affects someone's health	8.0 (33)	3.9 (9)[c]	3.1 (3)	4.1 (4)
Dwelling has				
Serious draughts	34.1 (142)	21.5 (49)[c]	34.7 (34)	20.4 (20)[d]
Minor draughts	16.2 (67)	8.2 (19)	15.3 (15)	6.1 (6)
No draughts	49.7 (206)	70.3 (162)	50.0 (49)	73.5 (72)
Draughts that affect someone's health	15.0 (62)	6.0 (14)[c]	11.2 (11)	6.1 (6)

[a]Significance test for cross-sectional samples using chi-square and refers to differences between the 1992 and 1997 distributions of all categories of the variable. For the longitudinal sample McNemar's test is used for dichotomous variables; the result for draughts refers to 'serious draughts/minor or no draughts'. Some variable totals are less than '*n*' due to missing cases

[b]Significant at $\rho < 0.01$

[c]Significant at $\rho < 0.001$

[d]Significant at $\rho < 0.05$

Table 3

Changes in self-reported symptomatic health and use of health services[a]

	Cross Sectional % (no.)		Longitudinal % (no.)	
	1992	1997	1992	1997
Adults' Health				
	n = 749	*n* = 394	*n* = 166	*n* = 166
General Health Status				
Good	50.6 (378)	56.5 (218)	52.7 (87)	51.2 (82)[b]
Fair	28.6 (214)	24.1 (93)	37.6 (62)	26.8 (43)
Not Good	20.7 (155)	19.4 (75)	9.7 (16)	22.0 (35)
Respiratory Conditions				
Acute	12.8 (96)	13.5 (53)	13.3 (22)	17.5 (29)
Chronic	28.8 (216)	35.3 (139)	31.9 (53)	44.0 (73)[c]
Mental health problems				
1+ problem(s)	52.0 (386)	37.0 (144)[d]	52.4 (87)	41.0 (68)[c]
Trouble with nerves (respondent only)	24.3 (100)	15.5 (36)b	19.8 (18)	9.9 (10)[c]
Use of health services				
GP visit in past 2 weeks	19.7 (146)	17.1 (65)	21.1 (39)	20.6 (34)
Hospital out-patient last 3 months	14.9 (110)	12.1 (47)	10.9 (20)	13.9 (23)
Hospital in-patient last 3 months	10.0 (74)	7.9 (31)	10.9 (20)	7.3 (12)
Prescribed medication for month or more	36.6 (273)	42.8 (165)	36.4 (67)	47.0 (78)[c]
Smoking				
Smoker	76.8 (568)	43.0 (166)[d]	71.6 (118)	27.9 (46)[d]
Non-smoker	23.2 (172)	57.0 (220)	28.4 (47)	72.1 (119)
Children's Health				
	n = 249	*n* = 131	*n* = 43	*n* = 43
General Health Status	59.8 (147)	78.7 (100)[d]	73.8 (31)	79.1 (34)
Good	30.0 (75)	15.7 (20)	23.8 (10)	20.9 (9)
Fair	10.8 (27)	5.5 (7)	2.3 (1)	0
Not Good				
Respiratory conditions	16.0 (40)	23.7 (31)	25.6 (11)	20.9 (9)
Acute	29.7 (74)	23.7 (31)	23.3 (10)	25.6 (11)
Chronic				
Mental Health Problems	22.5 (56)	9.2 (12)[d]	20.9 (9)	2.3 (1)[c]
1+ problem(s)				
Use of health services				
GP visit in past 2 weeks	13.6 (34)	8.4 (11)	15.9 (7)	0 (0)[b]
Hospital out-patient last 3 months	9.6 (24)	5.5 (7)	2.3 (1)	2.3 (1)
Hospital in-patient last 3 months	6.0 (15)	6.2 (8)	11.4 (5)	6.8 (3)
Prescribed medication for month or more	18.6 (46)	13.0 (17)	16.3 (7)	16.3 (7)

[a]See also note to Table 2. McNemar's test for general health status uses health 'good or fair/not good'
[b]Significant at $\rho < 0.01$
[c]Significant at $\rho < 0.05$
[d]Significant at $\rho < 0.001$

Table 4

Logistic Regression model of the odds of chronic respiratory health problem(s): adults[a]

Variable	*P* value	Odds ratio (95% CI)
Smoking		
Never smoked (*n* = 138)		
Smoker/ex-smoker (*n* = 599)	0.000	4.36 (2.46-7.74)
Damp		
Minor/no damp (*n* = 663)		
Serious damp (*n* = 74)	0.004	2.10 (1.26-3.50)
Un/waged household		
Household with wage earner(s) (*n* = 358)		
Household with no wage Earner (*n* = 379)	0.001	1.73 (1.24-2.41)
Age group		
16-49 (*n* = 466)		
50+ (*n* = 271)	0.011	1.54 (1.11-2.14)

[a]Model chi-square = 77.66, significant at <0.001

Table 5

Logistic regression model of the odds of mental health problem(s): adults[a]

Variable	*P* value	Odds ratio (95% CI)
Chronic respiratory health problem(s)		
No Problem (*n* = 234)		
One or more Problems (*n* = 163)	0.000	2.35 (1.50-3.69)
Safety of area		
Very/quite safe (*n* = 114)		
Not very safe/quite Dangerous (*n* = 283)	0.001	2.35 (1.41-3.92)
Draughts		
Minor/no draughts (*n* = 258)		
Serious draughts (*n* = 139)	0.001	2.28 (1.41-3.69)
Age Group		
16-49 (*n* = 239)		
50+ (*n* = 176)	0.001	2.14 (1.37-3.35)

[a]Model chi-square = 52.04, significant at <0.001